

WHAT IS CLAIMED IS:

1. A circuit of a scanner to perform color space conversion for a RGB signal, comprising:

a plurality of sampling-amplified-offset devices, to sample, amplify and
5 compensate levels of an R charge signal, a G charge signal and a B charge signal, respectively, to obtain an R analog signal, a G analog signal and a B signal;
an adder, to perform an addition calculation on the R analog signal, the G analog signal and the B analog signal to obtain an addition analog signal; and
a multiplexer, to select the R analog signal, the G analog signal, the B analog
10 signal or the addition analog signal as output.

2. The circuit according to claim 1, wherein each of the sampling-amplified-offset devices further comprises:

a correlation double sampler, to perform sampling two times on the R, G or B
15 charge signal, and to perform a subtraction operation on results of the two samplings to obtain a luminance;

a programmable gain amplifier, to adjust a gain value to amplify the luminance, and to obtain an amplified luminance according to the gain value; and

an offset device, to compensate level of the amplified luminance to obtain the R,
20 G or B analog signal of the R, G or B charge signals, respectively.

3. The circuit according to claim 1, wherein each of the sampling-amplified-offset devices further comprises:

a correlation double sampler, to perform sampling two times on the R, G or B charge signal, and to perform a subtraction operation on results of the two samplings to obtain a luminance;

an offset device, to compensate a level of the luminance to obtain a compensated luminance; and

a programmable gain amplifier, to adjust a gain value to amplify the compensated luminance, and to obtain the R, G or B analog signal of the R, G or B charge signals.

4. The circuit according to claim 1, wherein the multiplexer selects the R analog signal, the G analog signal, the B analog signal or the addition analog signal and outputs the selected analog signal to an analog-digital converter, so that the selected analog signal is converted into a digital signal.

5. A circuit of a scanner to perform a color space conversion on an RGB signal, comprising:

a plurality of sampling-amplified-offset devices, to sample, amplify and compensate levels of an R charge signal, a G charge signal and a B charge signal, respectively, to obtain an R analog signal, a G analog signal and a B analog signal;

a gain adder, to multiply each of the R, G and B analog signals by a corresponding weighted value, and to add the R, G and B analog signals multiplied by the weighted values to obtain an addition analog signal; and

a multiplexer, to select the R analog signal, the G analog signal, the B analog signal or the addition analog signal as output.

6. The circuit according to claim 5, wherein each of the sampling-amplified-offset devices further comprises:

a correlation double sampler, to perform sampling twice on the R, G or B charge signal and to perform a subtraction operation on results of the two samplings to obtain a luminance;

a programmable gain amplifier, to adjust a gain value to amplify the luminance and to obtain an amplified luminance according to the gain value; and

an offset device, to compensate a level of the amplified luminance to obtain the R, G or B analog signal of the R, G and B charge signals, respectively.

7. The circuit according to claim 5, wherein each of the sampling-amplified-offset devices further comprises:

a correlation double sampler, to perform sampling twice on the R, G or B charge signals and to perform a subtraction operation on results of the two sampling samplings to obtain a luminance;

an offset device, to compensate a level of the luminance to obtain a compensated luminance; and

a programmable gain amplifier, to adjust a gain value to amplify the compensated luminance and to obtain the R, G or B analog signals of the R, G or B charge signal, respectively.

8. The circuit according to claim 5, wherein the gain adder further includes:

a plurality of gain amplifiers, to multiply the R analog signal, the G analog signal, the B analog signal by the corresponding weighted gains to obtain a plurality of weighted analog signals; and

an adder, to add the weighted analog signals to obtain the addition analog signal.

5

9. The circuit according to claim 5, wherein the multiplexer selects the R, G or B analog signals and outputs a selected one to an analog-digital converter, which then converts the selected one into a digital signal.

10

10. A circuit of a scanner to perform a color space conversion on an RGB signal, comprising:

a plurality of sampling-amplified-offset devices, to sample, amplify and compensate levels of an R charge signal, a G charge signal and a B charge signal, respectively, to obtain an R analog signal, a G analog signal and a B analog signal;

15

a plurality of gain adders, to multiply each of the R, G and B analog signals by different weighted values to obtain a plurality of results, and to add the results of each of the R, G and B analog signals into a plurality of addition analog signals; and

a multiplexer, to select the R analog signal, the G analog signal, the B analog signal or the addition analog signals as output.

20

11. The circuit according to claim 10, wherein each of the sampling-amplified-offset devices further comprises:

a correlation double sampler, to perform sampling twice on the R, G or B charge signals, and to perform a subtraction operation on results of the two samplings to obtain a luminance;

a programmable gain amplifier, to adjust a gain value to amplify the luminance

5 and to obtain an amplified luminance according to the gain value; and

an offset device, to compensate level of the amplified luminance to obtain the R, G or B analog signal of the R, G and B charge signal, respectively.

12. The circuit according to claim 10, wherein each of the sampling-amplified-

10 offset devices further comprises:

a correlation double sampler, to perform sampling twice on the R, G or B charge signal and to perform a subtraction operation on results of the two samplings to obtain a luminance;

an offset device, to compensate a level of the luminance to obtain a compensated

15 luminance; and

a programmable gain amplifier, to adjust a gain value to amplify the compensated luminance, and to obtain the R, G or B analog signal of the R, G and B charge signal, respectively.

20 13. The circuit according to claim 10, wherein each of the gain adders further includes:

a plurality of gain amplifiers, to multiply the R analog signal, the G analog signal, the B analog signal by the corresponding weighted gains to obtain a plurality of weighted analog signals; and

an adder, to add the weighted analog signals to obtain the addition analog signal.

14. The circuit according to claim 10, wherein the multiplexer selects the R, G or B analog signals and outputs a selected one to an analog-digital converter, which then

5 converts the selected one into a digital signal.